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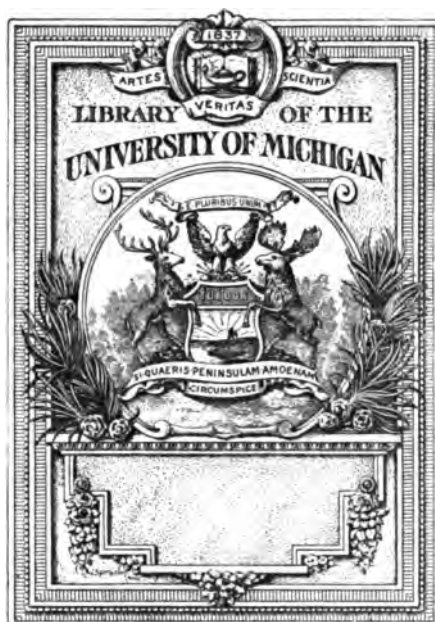
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A SHORT HISTORY
OF THE
ART OF PRINTING
IN ENGLAND.

BY
Arthur C. J. Powell.

*Issued as a Supplement to the PRINTERS' REGISTER, in commemora-
tion of the Hundredth Anniversary of the Introduction of Printing into*

LONDON
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P R E F A C E.

THE object of this little treatise is to present a brief but fairly complete sketch of the history of Printing in this country.

By the Art of Printing is generally understood the art of printing from moveable types. It is on this basis that I have dealt with the subject, no reference being made to Lithography, Copperplate printing, or the other processes by which impressions are obtained.

As my readers will be found chiefly among the printers themselves, I have not thought it necessary to describe operations with which they are familiar. At the same time it is hoped that sufficient explanation is given to render the work intelligible to those who are unacquainted with the practice of the art.

Being limited as to space, it has been my endeavour, after the introductory chapter, to confine myself strictly to the development of the Art in England, and to state all facts as tersely as possible. As, however, the work is published in commemoration of our first English Printer, I have written his biography at greater length than I should otherwise have done.

Wherever practicable, I have sought the original sources of information, but want of time has prevented me from proving some dates and statements as thoroughly as I could wish.

My thanks are due to Mr. William Blades, for supplying me with the means of obtaining photographic blocks of several old engravings; to Mr. Elliot Stock, for affording the opportunity of producing a fac-simile of a page of the first book printed in England; to Mr. John Southward, for many valuable suggestions; and to Messrs. Koenig & Bauer, Messrs. Miller & Richard, Mr. Talbot Reed, Mr. Wm. Conisbee, Mr. W. Dawson, Mr. Samuel Bremner, Mr. J. M. Napier, and other gentlemen, for information they have given me.

A. P.

London, June, 1877.

A SHORT HISTORY OF THE ART OF PRINTING IN ENGLAND.



INTRODUCTORY CHAPTER.

THE INVENTION OF PRINTING.



THE possibility of obtaining an impressed image of an object upon suitable material, must have been one of the earliest perceptions of the reasoning mind of man. Even at the very dawn of his intellectual powers, he could scarcely fail to observe the prints of his feet on the ground that he traversed, or the nature of plastic earth to retain shapes imparted to it. That he soon made use of this knowledge is certain, for we find mention of seals in the histories of the most remote ages. Relics which have come down to us of the great kingdoms of old show, too, that the notion expanded, though not to any material extent. Bricks made in Egypt and in Babylon many centuries before the Christian era have been found bearing impressed designs and frequently impressed writings. One of such bricks is now carefully preserved in the museum of Trinity College, Cambridge, another is in the British Museum, and many other examples have lately been discovered. It has been deemed surprising that both the Greeks and the Romans, though they made considerable advances in the art, failed to

perceive the great ends to which it might be applied.* The only one of the ancient nations that appears to have possessed any notions of it at all approaching those of modern times was the Chinese, that wonderful people which has in so many inventions forestalled the sages of the West. Printing is said to have been practised by them no less than fifty centuries before Christ, and their methods of employing the art were greatly in advance of those of the Egyptians or the Assyrians. Their present process (and it probably differs little from that used a thousand years ago), is to place a written sheet face downwards upon a block of soft wood, and to press it so that the lines are transferred to the wood; the plain surface is then cut away, and the words are left in relief. In printing, the ink is applied with a soft brush, the paper laid on the block and the impression taken by passing another brush over it. It is contended by some that this system was communicated to the Italians by Marco Polo, the great Venetian traveller, on his return from the East in 1495, and that he was the introducer into Europe of the art of Block Printing. But this art would appear to have been independently invented in Italy some ten years earlier, the credit of the invention being generally attributed to Alberico and Isabella Cunio, twin children of one of the lords of Imola. These, when only sixteen years of age, engraved on wood some pictures designed to represent certain "heroic actions of Alexander the Great," and from the blocks thus produced they took several impressions on vellum, one of which they dedicated to Pope Honorius IV. From this fact the date of the invention has been fixed at 1284-5.

The process of Block Printing was not long confined to Ravenna, its birthplace. It rapidly spread, not only throughout northern Italy, but also to the principal cities of France, Germany, and the Low Countries. It was used for producing rude pictures of the saints, but more especially for printing playing cards, the impression being taken by laying the paper on the inked block and rubbing the back with a burnisher. That this trade was a flourishing one may be gathered from a decree of the Court of Venice in 1441, which, reciting that the influx of foreign playing cards and printed figures (*carte e figure stampide*) had become so great that the native workmen were seriously prejudiced, forbade all importations of them for the future.

From the printing of single pictures to that of books was a march of

* There is preserved in the Library at Upsal an ancient translation of the Scriptures called the *Codex Argenteus*, which was discovered in the Abbey of Werden in Westphalia, and is believed by some to be the identical version of Ulphilas, Bishop of the Goths, in A.D. 360. The letters are of silver with gold initials, and are stamped with hot metal types upon violet coloured vellum. It is deduced from this and other facts that printing was all but invented in the days of the Romans.

THE INVENTION OF TYPOGRAPHY.

enterprise rather than of genius. Of the books produced by *Biblia Pauperum*, or Poor Man's Bible, has attained great celebrity of forty leaves printed on one side only, in brown distemper, burnisher, the blank backs being pasted together. It comprises a illustrating the chief events in Sacred History, with a few lines attached to each. It was printed between 1420 and 1450, and dozen copies of it now in existence.

Having now blocks consisting partly of pictures and partly could be more natural than that the printers of those days, or "f as they were called, should endeavour to turn them to account after their original purpose, by severing the words one from another, in fresh combinations? This was probably done to a considerable have led directly to true Typography, that is, printing from metal.*

The honour of this glorious invention—perhaps the most beneficial that has ever been made,—has been claimed for many persons. The pretensions of most of the claimants have long been those advanced on behalf of John Gutenberg, of Mainz, and of Coster, of Haarlem, until very recently afforded grounds for two to be based upon. The claims of Coster were first put forward by Junius, a native of Haarlem, in a statement written in 1575, and *Batavia*, or History of the States, in 1588. The following is an "There lived a hundred and twenty-eight years ago, at Haarlem, overlooking the forum, Laurentius Joannes, by surname *Ædituus* by chance, walking in a suburban grove, began first to fashion letters, which, being impressed upon paper, reversed in the mirror, produced one verse, then another, as his fancy pleased, to be read by the children of his son-in-law, for which, when he had happily succeeded, began to agitate higher things in his mind, and first of all his son-in-law, Thomas Peter, a more glutinous and tenacious spirit, ink, which he had commonly used to draw letters; thence he

* A very remarkable book, the *Speculum Humana Salvationis*, was printed in Holland about the 15th century. It consists of pictures with descriptive text to each, printed on one side of the paper only. The first twenty pages are printed in brown ink entirely from wood-blocks, while in the remainder of the book the pictures are printed in brown ink, and the text below them separately worked in black ink from moveable type. The name of its printer and his abode would throw great light upon the much vexed question as to the birth

figured pictures with characters added. Afterwards he changed beech-blocks for lead; afterwards he made them of tin, because it was a material more solid and less flexible, and more durable. The demand for his works being great, it was necessary to employ workmen, the first touch of evil, among whom was a certain Joannes, surnamed Faustus, who, having learnt the art, did, on one Christmas Eve, steal the whole plant, and, hurrying from the house, went first to Amsterdam, thence to Cologne, until he arrived at Mayence, as to an altar of an asylum, and there having opened an office, he enjoyed the rich fruit of his robberies. For in 1442, less than a year afterwards, he, with the same types which Laurentius had used at Haarlem, produced the *Doctrinale* of Alexander, with the *Tractates* of Peter Hispanus. These things were related to the narrator by Nicholaus Gallius, his old instructor, who had heard them from Cornelius, a bookbinder, who had lived as an under workman in that office (the office of Coster) and by Quirinus Talesius, the consul, who had heard them from the same bookbinder."

That such a story should obtain credence is not unnatural, especially when we remember how much the art of block printing was practised in the Low Countries. Its untruthfulness has, however, been recently demonstrated by Dr. Van der Linde,—himself a native of Haarlem, and therefore likely to have been originally biassed in favour of his own city,—who has shown, in a work exhibiting the closest criticism of the subject, that there never was such a person as the Coster said to have been the inventor of printing, and that the whole story is fictitious from beginning to end.

The annihilation of the Costerian theory does not, however, altogether dispose of the claims of Holland to the invention of printing, for apart from the *Speculum* before mentioned, there yet remain fragments of more than fifty books, printed from moveable type, which can scarcely be accounted for as the production of men who learnt the art directly or indirectly from Gutenberg. From what we have already stated, it is by no means impossible that printing was independently invented about the same time both in Germany and in Holland. Be this as it may, the German school was greatly superior to the Dutch, and there can be no doubt that it is to it and its founder, John Gutenberg, or Gensfleisch, that the world is chiefly indebted for the art of typography.

John Gutenberg was the son of Frielo Gensfleisch von Gutenberg, who, as may be gathered from his title, was a member of a patrician family. He was born at Mainz in or about 1397. In 1434 he was living at Strasburg, as appears

JOHN GUTENBERG.

from the records of an action he brought against the Recorder of Strasburg for the payment of an annuity due to him. From the Acts of Strasburg, 1439, we find that he was sued by George and Nicholas Dreitzehn, who admitted them into partnership, and the evidence recorded makes mention of the possession of Andrew Dreitzehn, the deceased brother of Gutenberg, of and of four *stücke* (probably pages) which were thereon. Gutenberg demanded that these should be broken up "so that thereafter no man could understand," and despatched his servant with a message to Nicholas Dreitzehn "that he should take so much trouble as to go to the press, and with the screws upon them separate the *stücke* from one another, and then return the *stücke* themselves." The action was settled on Gutenberg's paying them fifteen gulden.

He continued to live at Strasburg till 1444, when he returned to Mainz. Here he was assisted pecuniarily by his uncle, who lent him 1500 gulden. In 1450 he entered into partnership with John Fust, a wealthy goldsmith, who lent him 800 gulden at six per cent. interest, for purchasing materials to furnish 300 gulden half-yearly as working capital. In 1452 Fust lent him a further sum of 800 gulden.

Up to this time Gutenberg had been experimenting, first possibly with wooden types and afterwards with metal ones. The labour of cutting types separately many hundreds of times must have been so apparent that doubtless never attempted. The idea of casting the types must have occurred upon before any real work was attempted. It is not unlikely that the idea was embraced by Gutenberg in 1452, and was the cause of Fust's seceding.

It was not till 1455 that the first typographically printed book appeared. This was the *Biblia Latina Vulgata*, consisting of 641 leaves, and printed in two volumes. It was printed on paper, and every page was in two columns (with the exception of the first ten pages) comprising forty-two lines. It contained no initials, catchwords, nor folios. The ink with which it was printed was a mixture of lampblack, gum, and lime, and it may still be removed by application of water.

While Gutenberg had been engaged on this great work he had employed by assistants, the two chief being Peter Schoeffer and Albert Pfister. Afterwards set up at Bamberg, and was the first to establish a printing press at Mainz. The former was a native of Gernsheim, and was by profession a goldsmith. He joined Gutenberg and Fust probably about 1451.

In the same year that the Bible was finished, 1455, Fust obtained a judgment against Gutenberg for the repayment of the 1,600 gulden lent, together with interest. Gutenberg not being able to pay the debt, his partner took possession of all his printing materials. Notwithstanding this disheartening reverse, the inventor of printing determined not to relinquish his great art, but, borrowing sufficient money from Dr. Conrad Humery, of Mainz, he started afresh, and in 1460 issued the *Catholicon*, a large folio volume of 373 leaves, some copies being printed on vellum and others on paper. We know of no other great work indisputably printed by Gutenberg, but from a legal document, dated 1459, we learn that he had given some books to the library of the Abbey of St. Claire, of Mainz, and that he promised giving to it all the books which he had printed up to that hour, or which he should thereafter print.

On the 17th January, 1464, Adolphus II., Elector of Nassau, admitted him by letters patent into his service, and in it he continued till his death, which happened in the end of 1467 or the beginning of 1468. He was buried in the Dominican Monastery at Mainz, though until recently it was supposed that he was interred in the church of the Franciscans, and near the spot where this stood a statue by Thorwaldsen was erected to his memory in 1837. Another monument stands in the place that bears his name in Strasburg.

At his death his printing materials were taken possession of by Humery, and by him afterwards sold or leased to Heinrich Bechtermünz.

Fust, after seizing Gutenberg's plant, as above narrated, carried on the printing business in connection with Schoeffer, who materially improved it by his skill in designing the forms of characters, and who, by the invention of the art of punch-cutting, may lay claim to much of the honour of rendering typography successful. These two, in August 1457, issued a folio edition of the Psalter, beautifully executed, with hand-painted initials. It is the earliest printed book yet discovered which bears a date. Only six copies are extant, that in the Royal Library at Windsor being printed on vellum, and comprising about 130 leaves. As this book was issued but eighteen months after Gutenberg's dismissal from the firm, he is entitled to share the credit of producing



THORWALDSEN'S STATUE OF
GUTENBERG.

it. Fust and Schoeffer afterwards printed a Latin Bible (in 1462) and several other works.

The city of Mainz being, in 1462, besieged and captured by the Elector Adolph, the workmen employed by the three earliest printers were dispersed, and carried the art into different countries. Ulric Zell, the only one of them of whom it concerns us to take notice in the present treatise, set up at Cologne in 1468.

About 1472-73 Colard Mansion commenced printing at Bruges. Where he learnt the art is still a mystery, and can only be accounted for by accepting the suggestion that typography was independently invented in Holland. He could hardly have been a pupil of Gutenberg or of Schoeffer, for their styles were so superior to his that he would scarcely have forgotten them when exercising the craft on his own account. His press is of great interest to Englishmen, for it was from it that our own emanated.

CHAPTER II.

THE INTRODUCTION OF PRINTING INTO ENGLAND.

UP to the middle of the seventeenth century it was universally conceded that the honour of having introduced the art of printing into England belonged to William Caxton. Shortly after the Restoration, however, a book was found in the library at Cambridge, entitled *Expositio Sancti Jeronymi in Simbolum Apostolorum ad Papam Laurentium*, and bearing this colophon: "Explicit Expositio Sancti Jeronymi in Simbolo Apostolorum ad papam Laurentium, Oxonie Et finita, Anno Domini m.cccclxviii. xvii. die decembre." It would certainly appear therefore, from this book, that printing was practised at Oxford in 1468, and as this was some years before Caxton set up his press, priority was claimed for the city of learning. The printer's name did not appear, but it happened that in 1664, one Richard Atkyns, a printer, who held a patent from the crown, published a work entitled *The Original and Growth of Printing, collected out of the History and the Records of the Kingdome; wherein is also demonstrated*

that Printing appertaineth to the Prerogative Royal, and is a Flower of the Crown of England, and in it the author asserted that a friend had shown him a book printed at Oxford in 1468, and that the same friend had furnished him with a copy of a manuscript in Lambeth House, wherein it was stated that "Thomas Bouchier, Archbishop of Canterbury, moved the king, Henry VI., to use all possible means for procuring a printing mold to be brought into this kingdom, to which the king readily hearkened, and assigned the sum of 1,000 merks (of which sum Bouchier contributed 300) to the purpose of drawing off some of the workmen from Harlein in Holland, where John Gutenberg had recently invented it, and was himself personally at work. Mr. Robert Turnour, the king's master of the robes, was selected to manage the business; and he, taking with him Mr. Caxton, a citizen of good abilities, who, trading much with Holland, ought to be a creditable pretence, went first to Amsterdam, then to Leyden, not daring to enter Harlein itself. They spent the 1,000 merks in gifts and expenses, so the king was fain to send 500 more. At last, with much ado they got off one of the workmen, Frederic Corsellis; and, it not being prudent to set him to work in London, he was sent under a guard to Oxford, and there constantly watched until he had made good his promise in teaching how to print. Printing was therefore practised in England before France, Italy, or Germany, which claims seniority of Harlein itself, though it is known to be otherwise, that city gaining the art by the brother of one of the workmen of Harlein, who had learnt it at home of his brother, and after set up for himself at Mentz."

The absurdity of the statements concerning Gutenberg and the priority of England are sufficient to stamp this account as untruthful, yet diligent search has more than once been made for the MS. Of course it has not been discovered, nor is any one known to have seen the copy Atkyns refers to. Indeed, as to the latter, it was doubtless fabricated to support the notion Atkyns tells us he was strongly imbued with, that "a publique person and a publique purse must needs be concerned in so publique a good." But the book with the date 1468 is a reality, and has been inspected by many critics, who, however, agree that from its style and workmanship it could not have been printed in 1468, but was probably issued ten years later, the printer having by mischance omitted an x in the imprint, an error of which this is by no means the only instance. The claims of Corsellis must therefore be rejected, and he being disposed of, there is no one left to dispute with William Caxton the honour he so justly deserves.

William Caxton was born, as he himself tells us in the prologue to his "Recuyell of the Histories of Troye," in the Weald of Kent, though the exact spot where he first saw the light is unknown. The date of his birth is fixed by Blades at 1422-3.* Nothing is known of his father or any of his ancestors, though they must have been of a respectable class, for the young William was sent to school, and none below the rank of yeoman had the privilege of education. The first reliable date we have is that of his apprenticeship, 1438. In this year, being then about sixteen years of age, he was bound, according to the customs of the City of London, to Robert Large, a member of the Mercers' Company, and a rich and influential merchant, who shortly afterwards became Lord Mayor. Large lived in a mansion at the north end of the Old Jewry, noted by Stow as of historic interest, and appears to have had a family consisting of four sons and two daughters, together with eight apprentices and two assistants who were out of their time. Here he died in 1441, and by his will, proved in the Prerogative Court of Canterbury, he bequeathed to Caxton a legacy of 20 marks (about £150). With this sum the latter appears to have betaken himself to Bruges very shortly after his master's death. Large, with his great commerce, must have had much intercourse with Flemish merchants, and with some of these the apprentice may have become acquainted. It was a common thing in those days, says Wheeler, for young men to go abroad "to learne good facions and knowledge in trade." At Bruges, English merchants were much favoured by Philip le Bon, who in 1446 granted them great privileges under the name of the English nation.

Caxton ceased to be an apprentice about 1446, and thereupon became a freeman of the Mercers' Company. He entered at once into business on his own account, and appears to have thrived, for by the Bruges Records for 1450, we find that he had become surety for the payment of £110 (equal to more than £1000 now). In 1453 he came to London, and was admitted to the Livery of the Mercers' Company. He cannot have remained there long, however, for in 1462 he was acting as Deputy Governor of the English Merchants at Bruges, and as such was corresponding with the Lord Chancellor of England and with the Wardens of the Mercers' Company as to the regulation of the buying of goods at that city. In 1464 he was Governor, the position being one of great

* The dates and statements of Lewis, Oldys, Dibdin, and other biographers of Caxton, are rejected where they do not coincide with those of William Blades, who, with great learning and research, has written the most detailed and trustworthy Life of Caxton we yet possess. Blades's theories have, however, been subjected to severe criticism by several Continental biographers, especially by J. P. A. Madden in his *Lettres d'un Bibliographe*, published at Paris in 1868—1875.

honour and importance. In this capacity he was selected one of two commissioners appointed by the King of England to obtain a renewal of the Treaty of Trade, which would expire on the 1st of November, 1465. The mission was unsuccessful, and, the treaty terminating, Caxton was urged by the Mercers' Company to consult with his fellow merchants as to the best means of protecting their goods and persons until such time as it might be renewed. This, doubtless, he did, though to no good end, for the Duke of Burgundy prohibited the sale of English cloth in his dominions, a step followed by an Act of the English Parliament forbidding the importation of Flemish goods, which Act Caxton was enjoined by the Earl of Warwick and by the Mercers' Company to carry out. This deadlock continued till the death of Philip le Bon in 1467. He was succeeded by his son Charles le Temeraire, between whom and Margaret, sister of Edward IV., a marriage was shortly afterwards celebrated. Caxton, occupying the position he did, was doubtless present at the ceremony, and there became acquainted not only with the British Ambassadors, of whom Lord Scales, afterwards Lord Rivers, his chief patron, was one, but also, most probably, with the princess herself. In the following year Caxton was appointed one of three ambassadors for the purpose of concluding a new treaty of trade, an object which was this time successfully accomplished.

This anxious time over, Caxton appears to have had more leisure, for in March 1469, he, "to avoid sloth and idleness," as he tells us, began to translate "*Le Recueil des Histoires de Troye*," a very favourite romance of that period. He did not proceed far with it, however, having stopped his work after filling five or six quires of paper, equal to about thirty sheets. His official duties, perhaps, became heavier, for he continued Governor of the English until at least the middle of 1469, if indeed not longer. In 1470 Edward IV. and many of his nobles visited Flanders as refugees, and Caxton would naturally be one of those best able to afford assistance to his countrymen. The favour subsequently extended to him by Edward would lead us to suppose that he did so.

Shortly after resigning the post of Governor, Caxton entered the service of the Duchess of Burgundy, in what capacity is not known, though it must have been an honourable one. He says that on speaking to her highness one day of his attempt at translating, she enjoined him to complete the work he had begun, and this he did in September, 1471. The success which attended his labours was great, and his translation became so popular that he was unable to multiply copies of it fast enough to supply the demand.

As stated in the first chapter, Colard Mansion had but a short time previously set up as a printer at Bruges. Caxton must have known of this fact, and in the course of his travels with the Duchess, would probably have become acquainted with the works issued by Ulric Zell at Cologne. Being sorely pressed for copies of his book, which could not be supplied, he determined to have recourse to the new art, and herein displayed that enterprise which characterised him as a merchant. He accordingly entrusted his work to Mansion, who, aided by Caxton's gold, and probably under his personal supervision, produced printed copies of it about 1474.* This effort was so successful, that Caxton immediately attempted another, and in the following year published *The Game and Playe of the Chesse*, the chief part of the mechanical execution of the work being done by Mansion, though Caxton must have assisted in it and in the printing of other works, or he would not have been able to start as a printer himself so soon as he did.

The success of typography being sufficiently demonstrated to Caxton, he at once conceived the idea of introducing the art into England, and for this purpose employed Mansion to cast a new fount of type. With this type the *Propositio Clarissimi Oratoris Johannis Russell*,—a quarto of four leaves,—was printed, and after that, *Les Quatres derrenieres choses qui sont advenir*, and then, its capability having been sufficiently tested, it was packed up and taken to England.

It was early in 1476 when Caxton left Bruges for his native land, which he had not seen, except on casual visits, for thirty-five years. On arriving there his first care would be to secure suitable premises in which to set up an office. These he found in Westminster, though we can only guess at his reasons for selecting that place. He might possibly have reckoned upon support from the ecclesiastics there, but if he did he was disappointed, for there is no evidence that he was afforded any facilities by the Abbot (Esteney, not Islip, as the older writers assert), and indeed that dignitary is only mentioned by him once, and that on the occasion of his having caused our printer to be shown "certayn euydences" in old English, which were to be reduced into the then modern English.

The story that the first press was set up in one of the chapels of the Abbey is a pretty one, but unfortunately it has no other foundation than the imprints to two or three of Caxton's books: "Emprynted in thabbey of west-

* Caxton's "Recuyell" was the first book printed in the English language.

mester." At that time "the Abbey" included not only the building, but its precincts, and hence the employment of the term by Caxton is justified, though his printing office was some distance from the sacred edifice. It is not likely that an art by no means cleanly would be allowed within the walls of the church, nor even in the Scriptorium. The fact indeed is that Caxton rented a house called "the Red Pale," in the Almonry of Westminster, situate a few score yards west-south-west of the Abbey towers. He chose this spot partly, perhaps, for the reason before mentioned, and partly, as Blades suggests, because the Mercers' Company held property in that neighbourhood, the great Wool Staple being held at Westminster at fixed intervals. Whatever may have led him to the choice, here he set up, and here he remained till the close of his life.

He probably commenced to print towards the latter end of 1476, for in the following year he issued *The Dictes and Sayings of the Philosophers*, a folio of seventy-six leaves, noteworthy as being the first book ever printed in this country. From this time he was fully employed, and in the remaining years of his life produced many works, some being of great magnitude, and several running through two and even three editions.* No fewer than fifty-four are known to us. Nineteen of them are religious books; nine relate to morality; four are historical and biographical; six poetical; ten are romances; and six miscellaneous. "The total produce of his press," says Blades, "not reckoning the books printed at Bruges, reaches to above 18,000 pages, nearly all folio size." It is a significant fact, too, that of the books he printed, at least one was written, and twenty-two were translated by himself, and he had just finished the translation of another when he died. His industry therefore must have been wonderful.

But though his business was so extensive, it did not prevent him from attending to other duties. He appears to have interested himself in parish matters, for his name is annexed as auditor of the accounts of St. Margaret's for the years 1478—1484, and he would doubtless attend the Wool Staple and the annual suppers of the Mercers at the "Pye" and the "Grehounde" for "auld lang syne."

His success, it must be confessed, was due to the noble patronage he received. Edward IV. ordered £30 (equal to £300 or £400 now) to be paid to him out of the Exchequer "for certain causes and matters performed by him for the said Lord the King," and the "Tully on Old Age," and "Godefroy of Boulogne"

* Some time between 1477 and 1480 Caxton issued a singular advertisement which is worth noticing: "If it plese ony man spiritual or temporal to bye ony pyes of two and thre comemoraciōs of Salisbury vñe enpryntid after the forme of this prefet lettre whiche ben wel and truly correct, late hym come to westmonester in to the Almonerrie at the reed pale, and he shal haue them good chepe."

Sedechias Was the first Philosophie by
 through the wil and pleaser of our lord
 Sapience Was Understande and labbes r
 ued. Whiche Sedechias saide that every
 tate of good? beleue ought to haue in hym sixtene ver
 ¶ The first vertue is to drede and knowe god? and
 angelles ¶ The seconde vertue is to haue discrecion to
 etene the goode from the badde and to vse vertu and
 vices ¶ The thirde vertue is to obeye the kynges or pr
 that god? hath ordeyned to reygne vpon hym and
 haue lordship and power vpon the people ¶ The fou
 vertue is to worship his fadre & his modre ¶ The fy
 vertue is to do Justely and truly to every creature
 his possibilitie ¶ The sixthe vertue is to distribute hi
 mes to the pouer people ¶ The seuenthe vertue is to
 and defende straungers and pilgrymes ¶ The eyg
 vertue is to kynde and determine him self to serue our
 god? ¶ The nynthe vertue is to eschewe fornicacion ¶
 tenth vertue is to haue pacience. ¶ The eleuenth ver
 is to be stedfast and true ¶ The twelfthe vertue is
 to be peafible and attemperate and shamfast of synne ¶
 thertenthe vertue is to loue Justice. ¶ The fourtenthe
 tue is to be liberal and not couetous ¶ The fyfteenth
 tue is to offre sacrifices to our lord god? almyghty for
 benefices and graces that he sheweth hym dayly ¶ The
 sixtenthe vertue is to worship god? almyghty and to
 hym hooly in his protection and defence for resistance o
 in fortunitees that dayly fallis in thys worlde ¶ The
 Sedechias saide that right as it apperteineth to the p

were printed under the King's protection. Edward's sister Margaret, Duchess of Burgundy, was his firm supporter, as was also Margaret, Duchess of Somerset, the mother of Henry VII. Earl Rivers, the Queen's brother, was his intimate friend; to the Earl of Warwick he dedicated his Chess Book; to Richard III. his Order of Chivalry. The "Fayts of Arms" was translated and printed at the personal request of Henry VII., and the "Eneydos" was dedicated to Arthur Prince of Wales. From the Earl of Arundel he received "a buck in summer and a doe in winter." These are only some of his patrons; many others, some named, and others included among the divers "gentylmen and ladyes" of whom he speaks, encouraged him in his art.

The rapidity with which he executed his tasks varied considerably, ranging from seven weeks for printing "Corydale" (152 pp.), to eleven months for "Good Manners" (132 pp.)

When nearly seventy years of age he undertook the translation of "Vitas Patrum," and just managed to finish it before he died. Wynken de Worde, his successor, published it with this colophon: "Thus endyth the moost vertuouse hyftorye of the devoute and right renowned lyves of holy faders lyuyng in deferte, worthy of remembrance to all well dysposed perfones which hath bē translated oute of French into Engliffhe by William Caxton of Westmynstre, late deed and fynyshed at the laft daye of hys lyff." From this it would appear that Caxton died suddenly.

The exact date of his death is not known, but from the position of the entry relating to it in the parish accounts of St. Margaret's, the event is supposed to have happened towards the end of 1491. This surmise is confirmed by a very old manuscript note in a book mentioned by Ames: "Of your charitee pray for the soul of Mayfter Wylyyam Caxton, that in hys tyme was a man of moche ornate and moche renommed wyfdome and connyng, and disceffed ful cryftenly the yere of our Lord MCCCCLXXXI." He was buried in St. Margaret's churchyard.*

He left a will, for the parish accounts mention fifteen copies of the *Golden Legend* "bequothed to the chirch behove by William Caxston." A diligent search by Blades in all possible registries has, however, failed to bring it to light.

Of his private or business life absolutely nothing can be learned. It is not likely that he was married, for he wrote a bitter satire on women, and it was a rule for English merchants abroad to live a life of celibacy. Moreover, the fact that his chief workman, Wynken de Worde, succeeded to his plant,

* A tablet to his memory was erected in St. Margaret's Church by the Roxburghe Club in 1819.

goes to show that he had no children. True, Bagford : his son-in-law, but this is only one of many rash and that ingenious biographer. However, the Parish Record that a "William Caxton" was buried there, and in 1490 : There is nothing to connect either of these with the thinks the first-named was his father.

From what has already been written, but more especially from the nature of his works, and from the prologues and colophons to them, his character may be estimated. Honest, very industrious and enterprising, he reached a position of great honour among merchants. As an author he was well versed in his own language, and gifted with a good style of writing. His numerous translations show that he was well acquainted with the French and Dutch tongues, and he could not have printed his ecclesiastical books



FAC SIMILE OF CAXTON

without a fair knowledge of Latin. He appears his career as a printer with the true commercial : and in this he was successful. But the result of ca was that the great majority of the books he publish

value. He did not, like the early German printers, dedicate his art to the production of the Bible, and perhaps the only classical works that issued from his press were the poems of Chaucer, and *Cicero, De Senectute*, and *De Amicitia*.* The fault, however was his patrons', not his own, for he himself fully appreciated high class literature.† In politics he appears to have been a Yorkist; in tone of mind Conservative. In his prologue to "Caton" he laments the degeneracy of the youth of London, and in that to "Godefry," he is so concerned at the decline of chivalry, that he urges the king to take immediate steps to revive it by commencing, if necessary, a new Crusade to recover the "holy cyte of Jherusalem." As a printer, he was behind his continental contemporaries. "He never," says Blades, "gave in to the new-fangled ideas about the advantage of title-pages to books. In his adoption of signatures, initials, and lines of even length, he was very late, and to the use of red ink he was evidently averse." Had he quitted Bruges twenty years later, his fame would have been confined to the limited circle of bibliophilists; but inasmuch as he was the first to confer upon us one of the most inestimable benefits it was possible for man to bestow, his name will be handed down to remotest posterity, and the glory of his gift preserved untarnished to the very end of time.‡

* The *Enydos* was not Virgil's *Aeneid*, but a translation of a French romance founded on it.

† See the "Prohemye" to his second edition of the *Canterbury Tales*, where he says, "we ought to gyve a synguler laude vnto that noble and grete philosopher Gefferey Chaucer the wch for his ornat wrytyng in our tongue maye wel have the name of a laureate poete."

‡ As there is no public statue of Caxton, no attempt to pourtray his countenance is made here. The generally-received portrait of him was invented by Bagford, and is in truth a portrait, not of the first English printer, but of Burchiello, the Italian poet, taken from a small 8vo edition of his work on Tuscan poetry, dated 1554.

CHAPTER III.

CAXTON'S CONTEMPORARIES AND SUCCESSORS.

NOT long after Caxton set up his press at Westminster, one was established at Oxford by Theodoric Rood, who came from Cologne, and who probably was one of the workmen of Ulric Zell, though there is no evidence of this. It was he who printed the *Expositio* with the date M.CCCC.LXVIII in mistake for M.CCCC.LXXVIII, which gave rise to Atkyns's invention of Corsellis, for two other books, dated 1479, are found to be in the same type as it, and one, *Alexander de Ales in libros Aristotelis de Anima*, dated 1481, bears the imprint "Impressum per me Theodoricum Rood de Colonia in Alma Universitate Oxon." He must therefore have arrived in this country about a year after Caxton. Between 1482 and 1485 he took into partnership Thomas Hunte, a stationer to the University, and he bringing some capital into the concern, a new fount of type was procured. This pleased them so well, that in the first book printed with it they inserted some Latin verses defying the competition of Venice, which even then had begun to export books to this country. Rood died in 1486, and for a century afterwards there is no trace of printing at Oxford. But when the Earl of Leicester, the favourite of Elizabeth, was Chancellor of the University, he caused £100 to be expended from the common chest to enable one Joseph Barnes to establish a press there. Barnes, who was the first "printer to the University," issued his first book in 1585.

Besides the Oxford Press, there were two other printing offices in England contemporaneous with Caxton's. Both of these were established in London, one by John Lettou, and the other by William Machlinia, both of whom probably came from Germany. Lettou had but poor, rude types, and was very unskilful in using them. He seems to have printed but two books alone, one in 1480, and the other in the year following, and then to have entered the office of Machlinia. The latter was a much better workman, though his style was not as good as that of Caxton. He set up in Holborn, near the Fleet Bridge, and when in partnership with Lettou, lived near All Saints' Church. He printed several books, using three kinds of type of more condensed character than Caxton's. Lettou

and Machlinia were the first in England to print a law book—Littleton on Tenures; their edition of it bears no date, but was probably published in 1481. It was most likely printed with the types of Lettou, for they are wretchedly bad, many being broken. Copies are preserved at the Libraries of the Inner Temple and the University of Cambridge.

Caxton, as we have said, was succeeded by Wynken de Worde, one of his workmen. De Worde was a native of Lorraine, and in all probability came over with Caxton from Bruges, and remained with his master till the death of the latter. He adopted Caxton's device with a little alteration, and stayed in his house, the Red Pale, till at least 1496, when he appears to have removed to other premises close by. In or about 1499 he went to Fleet Street, and lived at the sign of the Golden Sun, in the parish of St. Bride, till his death, which happened in 1534. He was buried in St. Bride's Church.

As a printer, Wynken de Worde was much superior to Caxton. He immediately adopted the practice of giving his books a title-page, and not content with the types that descended to him from his master, cut new and excellent faces, which range exceedingly well. He printed a large number of works, none of them of any great literary value.

Richard Pynson, a Norman by birth, was another assistant of Caxton's, after whose death he set up for himself in Fleet Street, at the sign of St. George, beside St. Dunstan's church. In 1508 we find him styled the King's Printer and Esquire. He employed William Tailleux, of Roan (Rouen), to print law books for him. In 1525 one Redman stole some of his devices, a proceeding to which Pynson angrily refers in the colophons to some of his works. The quarrel appears to have been made up, for Redman succeeded him in the same house. In 1529, Pynson seems to have died or retired, we cannot tell which, for in that year Thomas Berthelet was appointed King's Printer. Pynson deserves to be especially remembered as the first English printer who used Roman type.

In connection with the King's patent to Pynson, one Guillam Faques is mentioned as "King's Printer." Faques was also a Norman, and resided in the parish of St. Helen's, London, for about six years. His style was excellent, and his types well cut. He died in 1511, when it is supposed that his plant passed into the hands of Wynken de Worde.

Julian Notary was another printer of this period. He started in 1498 at King Street, Westminster, but in 1503 removed to the "Three Kings" in the

parish of St. Clement's, outside Temple Bar, and later on to a house with the same sign in St. Paul's Churchyard. He was possessed of no great skill.

Next to Oxford, St. Albans was the first provincial town to welcome a printing press. This was erected about 1480, it is not known by whom, but is generally believed to have been a monk of the Abbey. When Cardinal Wolsey was Abbot of St. Albans, it is supposed that he forbade printing there, for there is no trace of the craft in his time. In 1534, after a lapse of fifty years, it was revived by John Hertford.

Cambridge was some years behind the sister university in providing a home for the "art preservative," for it was not till 1498 that a press was established there, John Sibert, of Lyons, being the first printer; nor does she appear to have given it great encouragement at first, for on the death of Sibert in 1522, there was a lapse of sixty-four years before his successor arrived. This was Thomas Thomasius, M.A., Fellow of King's College, Cambridge, who was licensed in 1582, but did not commence printing till 1584.

It is not proposed to chronicle the names of those who began to practice the art later than the fifteenth century, but some of them stand so pre-eminent that they deserve mention. Richard Grafton, printer to Edward VI., was the first to print the Bible in English. John Day (1549-1584), so improved the art that he has been called the English Plantin. The works of John Baskerville, of Birmingham (1750-1775), are highly prized for the beauty of the types, cut by himself, and for the great excellence of the press work. The names of Bowyer and Nichols are familiar in our ears as household words, while Bulmer and Whittingham produced specimens of typography that will compare with those of any age or nation. It would be invidious to point out among the living those who most worthily maintain the reputation of English printing.

CHAPTER IV.

THE POLITICAL STATUS OF ENGLISH PRINTERS.

THE first mention of printing in the laws of England is found in the statute 1 Ric. III., c. 9, concerning Italians and other foreigners, wherein it is provided that the Act shall not extend to any stranger for bringing into this realm or selling by retail or otherwise any books written or printed or to any printer of such books for inhabiting within this realm for the same intent. It seems from this that the legislature, though jealous of the influx of foreigners, which it considered detrimental to the interests of the country, was careful to make an exception in favour of the infant art which was destined slowly but surely to revolutionise the governments of the world. Its power for good and for evil soon became apparent, and in the reigns of some of the Tudor and Stuart sovereigns, the apprehension of its influence in the latter direction seems to have been so great that it almost obliterated the knowledge of its main tendency towards the former.

As has been shown, Richard Pynson received a patent from the king about the year 1500, and he was the first of a long line of "king's printers," some of whom were entitled "esquires" and permitted to bear arms. But besides these king's printers, there were others who obtained patents for printing special works, and in 1540 Henry VIII. granted a privilege to Richard Banks, by means of a proclamation which forbade all other printers printing any manner of books whatsoever that he should first print within the space of seven years after his first issuing the same.

The first attempt at licensing the Press appears to have been made by Henry in 1530, when he issued a proclamation "for dampning erroneous bokes," wherein he directed that such books as "The Wicked Mammonia," &c., printed abroad, should be delivered up to the curate or priest of the parish, and further, that no new book concerning holy scriptures should be printed in the English tongue until the same should have been examined and approved by the ordinary of the diocese. In 1533, an act was passed repealing the proviso in the statute of Richard III., and forbidding the importation of foreign printed books, at the same

time providing against the English printers raising their prices in consequence. This was a direct encouragement to the typographers of this country, and though in 1539 the king issued a proclamation restraining the printing of the Bible in English for five years, this was a measure of ecclesiastical policy only, and in no wise adopted for crippling the press. Indeed, we find no attempt on the part of Henry or his amiable son to harass the press. But Elizabeth, in her efforts to obtain despotic power, caused a decree to be made by the Star Chamber in 1566, that no one should print any book against the force and meaning of any ordinance or injunction set forth by the queen's authority, on pain of forfeiting all such books, of being imprisoned for three months, and of being incapable for ever thereafter of using "the feat of printing." Moreover, the Wardens of the Stationers' Company were to have authority to open and view all packs, dryfats, maunds, and other things wherein books or paper should be contained, and to search all workhouses, shops, warehouses and other places of printers and book-sellers for offensive books; and every printer was to enter into recognizances that he would duly observe all ordinances, pay all forfeitures and assist the said Wardens. This was followed in 1585 by a decree of the Star Chamber of the severest nature. It provided that all printers should be registered with the Stationers' Company; that there should be no printing presses out of London, except one at Cambridge, and another at Oxford; that no new printing office should be established "till the excessive multitude of printers having presses already sett up be abated" to the satisfaction of the Archbishop of Canterbury or Bishop of London; that no new book should be printed without its being first approved by the said Archbishop or Bishop on pain of six months' imprisonment; that no person should bind, stitch, sell, or dispose of any books contrary to the present ordinance; that all printing offices should be open to the inspection of the Wardens of the Stationers' Company, who were empowered to seize all suspected books, and also to confiscate the presses, types, and other material of any offending printer; that "for the avoyding of the excessive number of printers" no more than three apprentices should be allowed to each printer who was or had been Master of the Stationers' Company, nor more than two to him who was of the livery, and but one to him who belonged to the yeomanry only. The printers of the Universities were suffered to have only one apprentice at a time. This decree was confirmed by a proclamation of the Queen in 1588, and by another of James I. in 1623.

But still heavier fetters for the press were forged by the Star Chamber in

the reign of Charles I. By a decree of this unconstitutional court made on the 11th July, 1637, after reciting that the decrees and ordinances of Elizabeth had been found by experience to be defective in some particulars, and that divers abuses had sithence arisen, it was ordered that the former ordinances should stand in force as amended by the present decree. The clauses were thirty-three in number, the chief provisions being that no book should be printed unless the same should have first been licensed and entered in the Register of the Stationers' Company; that every bookseller and other person having books should, before he parted with any, supply a list of them to the Archbishop of Canterbury or the Bishop of London; that upon every thing that he printed the printer should set his name, and the name of the author, and by or for whom it was printed; that no one should set up a printing office, nor make a press, nor cast letters without first giving notice to the Stationers' Company; that besides His Majesty's printer and the printer to the Universities there should be twenty master printers and no more (the names of the first privileged ones are given), and in case of vacancies the Archbishop of Canterbury or the Bishop of London, with six other High Commissioners, might fill them up; that all printers should, within ten days, become bound in the sum of £300 not to print any but licensed books; that no printer should keep above two presses unless he should have been Master or Upper Warden of his Company, when he might keep three; and that whereas some printers had already more than this number, the supernumerary presses were to be suppressed; that there should be four founders of letters only, each of whom should be allowed to have two apprentices; that founders should employ no one who was not, or had not been, bound to the trade of founding letters, but that each founder might employ one boy who was not so bound to "pull off the knots of mettle hanging to the letters when they are first cast;" and that one copy of every book should be sent to Stationers' Hall for the Bodleian Library at Oxford. The provisions of the decree of Elizabeth as to the number of apprentices, and as to the inquisitorial powers of the Wardens of the Stationers' Company, were also continued. Offences against these decrees were to be dealt with by the Star Chamber or the High Commission Court, and the penalties of infringing any of the provisions were very heavy, extending even to whipping and the pillory.

Were it not for consideration of the troublous state of the times, it would be somewhat surprising that this oppressive decree was not abolished with the Court which made it, and still more so that its provisions should be confirmed by

ordinances of the Lords and Commons.* The printers themselves seem to have taken no steps to get rid of the restrictions imposed upon their craft, a circumstance which may be explained by the fact that those who had licenses deemed the fetters with which they were bound duly compensated by the monopoly they enjoyed. Yet they were not loth to petition the Commons in 1641 to put an end to four patents which interfered with their freedom.†

John Milton, in 1644, made a powerful speech in Parliament in favour of the liberty of the press, a speech which was subsequently printed under the title "*Areopagitica*," and remains a famous example of masterly satire. It had little effect in those days, for in 1661, soon after the Restoration, an Act was passed comprising nearly all the provisions of the Star Chamber Decree of 1637, and still limiting the number of master printers to twenty. It was to remain in force for two years only, but was continued by various Acts to 1693. Some idea of the persecution to which the press was subjected under the Stuarts may be gathered from the fact that Roger L'Estrange published in 1663 some "considerations and proposals in order to the regulation of the press," in which he advocated the reduction of the number of presses, the adoption of most stringent rules to be enforced upon those which were licensed, and the infliction of such punishment as death, mutilation, torture, the pillory, whipping, and branding upon offending printers. Yet the publication of this very pamphlet procured for the writer the appointment of "Surveyor of the Imprimery and Printing Presses!"

So matters continued until 1693. At this time Edmund Bohun was Licensor, a man of strong Tory principles, who owned obedience to William and Mary only because he considered they held the sovereignty by right of conquest. It was the serious indiscretions committed by this worthy, just as the Licensing Act was about to expire, that led directly to the emancipation of the Press. One Blount, to entrap him, wrote a book entitled "*William and Mary, Conquerors*," which, being in accordance with his own views, Bohun licensed.

* See Orders of the Commons, 29th January, 1641; 9th March, 1642; 20th June, 1643; an order of the Lords and Commons, 1643; an ordinance of the same, 1647; and a warrant of Lord General Fairfax, 1649.

† (1) A patent granted to Christopher Barker and his son Robert Barker, in the reign of Elizabeth, for the sole printing of all Bibles, Testaments, &c., in English. (2) A patent granted to Richard Tottle, and then lately confirmed to John More, for printing all law books whatsoever. (3) A patent granted first to John Norton, and since descended to Roger Norton, his kinsman, for the printing of all Bibles, Testaments, Grammars, &c., in Latin, Greek and Hebrew, together with an Introduction to Grammar in English, and sundry other books. (4) A patent then lately granted to Thomas Symocke for printing all things that were, might, or should be printed upon one side of paper.

No sooner was it published than all London was enraged at the licenser. The Commons summoned him to the Bar of the House, and after hearing his lame defence resolved that the book should be burned by the common hangman, and that the king should be petitioned to remove Bohun from his office.

Just previous to this event the Commons had resolved, without a division, to renew the Licensing Act. The last continuing Act had been in force for seven years, but now, although the bill was passed, it was only to operate for one year, and was not carried without amendments being proposed in both Houses and a protest from eleven peers, who declared it to be against public policy to subject all learning and information to the arbitrary will and pleasure of a mercenary and perhaps ignorant licenser.

Within a year it was necessary to bring in another bill to continue the Act, but when the question was put in the Commons, the Speaker declared that the Noes had it, and the question was negatived without a division!

There was that session another bill for continuing expiring laws. This was passed by the Commons and sent to the Lords, whence it was returned with the insertion of the Act for controlling the press. The Commons objected to this amendment, and on a conference with the Lords the latter gave way. A less objectionable measure was introduced into the Lower House shortly afterwards, but the session closed before it was passed, and thus, in 1694, the Press of England was emancipated, and has ever since remained free from political censorship.

In 1799, owing to the existence of certain seditious societies, an Act (39 Geo. III., c. 79) was passed, providing, amongst other things, that all printers, letter founders, and makers or sellers of types and printing presses, should be registered; that the name and abode of the printer should be printed on every book or paper; that all printers should keep one copy of every paper printed by them, and write thereon the name and abode of their employer; that no one should part with or expose to view any printed paper without the name of the printer being thereon; and that any justice of the peace might empower a peace officer to search for and seize suspected presses. This Act was slightly amended and explained by several subsequent statutes, and remained in force till 1869, when it was repealed, the provisions requiring printers to put their names upon everything they print, and to keep copies, and write upon them the names and abodes of their employers, being, however, retained.

There have been several statutes relating to newspapers, the chief being 60 Geo. III., 1 Geo. IV., c. 9, and 6 & 7 Wm. IV., c. 76. These were all repealed

EARLY PRINTING OFFICES.

in 1869; and now the press is virtually exempt from all restrictions w
save only those against libels and other offences which are prohibit
persons.*

CHAPTER V.

THE APPLIANCES OF EARLY PRINTING OFFICES.

SO far as we are able to judge, the art of printing, as practis
early printers, did not differ very materially from it as exercised
country offices at the present day. Indeed, in some branches there
little or no advance for more than two hundred years—a circumstanc
doubt, to the fact that there is little room for improvement. In t
typesetting and in the construction of machinery for printing there
a marked and rapid progress of late years, and a great degree of perf
been attained; but the operations of the compositor and the tools and
that he uses are virtually the same as those of his predecessors for g
back.

Although the printers of old often added to the books they pri
remarks concerning the typographical execution of them, there is lit
gathered from these as to the methods they adopted in their work.
our knowledge of the ancient modes of printing would be exceeding
were it not for a few engravings made in the sixteenth century, and
on the Continent. These, and a careful study of some of the bool
in the infancy of the art, form the basis of conjectures as to the usag
early printers, which, as they coincide with what we should expect, may be
with little reservation.

The printers of the earliest days were their own typesetters.
however, we shall have to speak in the next chapter. A fount of type

* The existing statutory provisions relating to printers and newspaper proprietors will be found in the s
to the Act 32 & 33 Vict. c. 24.

many more characters than than now, owing to the large number of double letters and contractions. Mr. Blades has estimated that there were 254 different sorts in a fount used by Caxton. One of the very first efforts of the proto-typographers, therefore, would be to find a means of keeping the different sorts distinct, and the advantages of using a shallow tray divided into a number of small boxes would very soon be thought of. The engravings mentioned show that it was in fact adopted. The number of boxes required for each fount would probably average 200, and these would be all of the same size. To learn the "lay of the case" in those days would require much time and patience, and the multitude of double letters, contractions, and duplicates, must have been an almost unmitigated evil—so much so, indeed, that printers soon discarded the majority of such characters.

The primitive method of type-setting was very simple, but at the same time attended with those drawbacks which so often result from simplicity. On a table near the cases the workman would place a wooden tray or coffin, having rectangular sides of little height. In this he would place the letters one after another as he took them from their respective boxes, until he could get no more into a line, and then he would have to choose between leaving a gap at the end of it to be filled up with quadrats and spaces, and dividing a word without regard to grammatical rule. Sometimes he would do the one, sometimes the other, and sometimes even both. Then he would place another line above the first, and so on. Mr. Blades explains the unevenness of the lines of the very early books by the fact that the types were rather rough, and that as the compositor used no setting rule he could not shift them about to justify. When the setting rule was adopted, as it was after a very few years, there was no difficulty in the way of justification, and the unsightliness of uneven lines was speedily got rid of.

When the coffin was nearly full, a piece of wood was placed at the bottom of the page, and the forme tightened by means of screws at the foot. It was then ready to be transferred to the press. Reglet appears to have been unknown to the earliest printers, for they used quads instead, and even "low" letters. These would sometimes make their appearance on the paper where it was not desired.

The composing stick was an instrument unknown to the first typographers. Caxton probably never saw one, yet it must have been used shortly after his death, in France at least, for it is clearly shown in the engraving to be found in

a book printed by Badius Ascensius, of Lyons, in 1507, a facsimile of which engraving is given here.*

A careful study of this and the annexed illustration will give the reader some insight into a printing office of the sixteenth century. In the first, the compositor seems to be a woman; she holds her stick in her right hand, and is picking up the types with her left—an eccentricity that is probably not her's but the artist's. In the second, which is sixty years later, being taken from Jost Amman's Book of Trades, 1568, the four workpeople are all men. Notice the stand that answers the purpose of the modern frame, and the position of the cases on it. It will



PRESS OF 1507.



PRINTING OFFICE, 16TH CENTURY.

be seen that even then the boxes appear to have been of the same size throughout. No table is shown where the pages were made up and the formes imposed, though there surely must have been one, for the bed of the press would not always be available for these purposes. The press itself in each case is a most solid-looking instrument. It is made of wood throughout, with the exception of the spindle, which is of iron, and the bed, which is of smooth stone. Observe how small the

* The original composing sticks were made of wood and of fixed measure. There is one in the Plantin Museum at Antwerp. Mr. Blades has a full-sized model of it, and also a very old French composing stick. This latter is made of iron, and is capable of holding but one line of type.

platen is; so small, indeed, that two pulls are required for each sheet. In the earlier print the pressman has just wound the bed under the platen and is giving the impression, while his "partner" is preparing the balls for inking. In the second picture we have the other stage of the operation. One pressman is removing the printed sheet while the other is diligently inking the forme. The press is fitted with tympan, frisket, and points, and appears capable of printing two folio pages. It is singular that the heaps of paper are on the wrong side, though this is again, doubtless, the error of the artist.

Paper in those days was by no means an inexpensive article. It was of good, sound quality, though rather coarse and unbleached. The advantages of wetting it before printing were soon discovered. The ink first used in England was very different to that now employed. It was very thin and "sloppy," and contributed much to the rude appearance of early printed books, inasmuch as it was impossible to get a sharp impression from the types, and any but a very gentle pull of the press would cause the ink to "spue." The inking balls were the same as those in general use up to about fifty years ago. They were made of untanned sheepskin stuffed tightly with wool, and fitted with handles. To keep them fit for use they had to be constantly steeped in urine. The ink was distributed upon them by rolling and dabbing the surfaces against one another.

The exact register attained by the very first pressmen has been a source of marvel. Points seem to have been used from the beginning, and were placed so that they perforated the four corners of the sheet. Some of Caxton's books retain their point-holes. Afterwards only two points were used, in the centre of the sheet, as shown in the engraving above.

The first English technical treatise on the printer's art is that of Joseph Moxon. Its date is 1683, and it occupies the whole of the second volume of his *Mechanick Exercises*—394 pages—being illustrated with numerous engravings. Moxon seems to have gone thoroughly into every branch of the art, and gives very wholesome instruction in it. In his time the cases were distinguished as upper and lower, the dimensions of the various boxes and the "lay" being very nearly the same as at present. Indeed, all the appliances of the composing-room—frames, cases, composing sticks, setting rules, slice galleys, imposing surface, chases, furniture, side and footsticks, quoins and shooting sticks, bodkins, mallet and planer, are as nearly as may be the same as those now used.

CHAPTER VI.

THE PROGRESS OF LETTER FOUNDING IN ENGLAND.

IT has been the pet theory of some that the earliest specimens of typography were printed from wooden types ; but apart from the improbability that trouble would be taken to cut the same letter over and over again, a scrutiny of the productions of the first printers serves to show that they were undoubtedly printed from cast metal types. Nor is it surprising that this should be so. The art of metal founding was well known at the time of the invention of printing, and though the notion of casting types may not immediately have entered the head of Gutenberg, his association with Fust, the goldsmith, would have led him to think of it, even if it were not indeed suggested by the latter. Be this as it may, Gutenberg's Bible was printed from cast metal types, and so were the books upon which are based the claims of Holland to the invention of typography ; nor do we know of any work which appears to have been printed from moveable characters cut on wood.

It has already been stated that the early printers were their own letter founders. How they cast thier types, however, is quite a matter of conjecture ; nor have we any evidence that will guide us to a definite conclusion. It would seem that the characters were originally cut on wood or soft metal, and that with the pattern thus made moulds were formed in sand or other suitable material, and in them the types were cast.* The metal used was doubtless lead. That it was very soft we may judge from the plan adopted by Caxton and others of touching-up, with a sharp instrument, letters that had got rounded with wear.

The invention of the matrix is generally attributed to Peter Schoeffer, and it is, indeed, one of the most important made in connection with the art of printing, for without it types could never have been cast with sharpness. The shape of the letter was designed by skilled artists, who also cut the punches, though how far the division of labour was at first carried we are not able to

* This plan was adopted in the Caslon Foundry for large letters, and some relics of the process are still in existence.

tell. Goldsmiths appear to have been the chief makers of matrices, and to have sold them to printers for good prices.*

The first mention we have of typefounding in England is in Archbishop Parker's Preface to the *Chronicles of King Alfred*, by Asser, printed by John Day in 1567, wherein he says that Day was the first to cast Saxon type in England. It does not follow from this that Day was the first letterfounder in this country; indeed, it is far from probable that he was. There is no further notice of typefounding till the Star Chamber decree of 1637, by which time it had become a distinct trade; for that decree limited the number of founders to four, as we have seen. It had been so on the Continent for many years previously, for it is one of the trades illustrated in Jost Amman's book of 1568. Annexed



TYPE FOUNDED IN 1568.

is a copy of his wood cut. The founder is sitting down to his work, and is pouring the metal into a curious shaped mould, affixed to the bottom of which is the matrix. He sits in front of his furnace, whose heat has been raised by the action of the large pair of bellows standing against the wall. Near the latter is a basket of ingots and a pair of tongs for putting them into the metal pot, while beside the founder is a basket containing types he has cast. On the shelf are some more moulds, two crucibles, and some sieves, the last being used, perhaps, in sifting the sand employed in casting large types, as before suggested.

There are in the British Museum some specimen sheets of types cast in the early part of the seventeenth century. The English faces are far inferior to those cast abroad, and indeed, until the establishment of the Caslon foundry in 1715, the printers here were in the habit of importing their types from Holland.

Joseph Moxon, in his *Mechanick Exercises*, gives a description of the founder's art, from punch-cutting to type-dressing, illustrated with numerous engravings, one

* In 1477 the Ripoli Press (in Tuscany) bought of John Peter, a goldsmith of Mainz, the matrices of a fount of Roman type for ten florins in gold. Caxton, in the prologue to his first book—the *Recuyell*—says, "I haue practised and lerned at my grete charge and dispenfe to ordeyne this book in prynte."

of which (reduced) is given here. The founder of 1683 appears to have observed the desirability of standing up, and the mould that he uses is similar to the hand-mould used at the present time in very small foundries. It is made in two parts, capable of being put together to suit the width of the various letters to be cast, while the body remains the same throughout. The matrix is placed at the bottom of the mould, and kept in position by a long spring.



TYPE FOUNDRY IN 1683.

Moxon issued in 1669 some specimens of types cast by himself, and seven years later published a work upon the true forms of letters according to his notion of "geometric figures." Dr. Fell, Bishop of Oxford, gave a foundry to the University there, and Mr. Junius added to it. In 1695 a specimen sheet was issued from the foundry thus started, and the punches and matrices are still preserved at the Clarendon Press, where type-casting is yet practised. This Oxford foundry is the oldest in existence.

Mr. Rowe Mores, who wrote a dissertation on English foundries about a century ago, mentions several which were absorbed in that of Mr. James, of Bartholomew Close, who amassed a rare collection of punches and matrices, some of them said to have been used by Wynken de Worde. On the death, in 1772, of Mr. John James, the son of the originator of the business, this foundry was discontinued, the matrices and punches passing into the hands of Mr. Mores, and when he died they were sold by auction. What became of them afterwards is unknown.

It was William Caslon who laid the foundation of the fame of English letter founders. He was born at Hales Owen, in Shropshire, in 1692, and was apprenticed in London to an engraver on gun locks, a trade he subsequently followed on his own account, extending it also to the making of bookbinders' tools. Some specimens of the latter coming under the notice of Mr. Watts, an eminent printer of that day, he, with Mr. Bowyer and Mr. Bettenham, also printers, induced Caslon to turn his attention to punch-cutting. This he did, and his three patrons lending him £500, he started a typefoundry about 1723. He was most successful in his undertaking, the elegance of his letters rendering them preferable to those imported from abroad. Printers patronised him well, and he soon moved from his garret in Helmet Row to Ironmongers' Row, and

afterwards (in 1741) to Chiswell Street. He prospered so greatly that he took a country house at Bethnal Green, and was appointed a justice of the peace for the County of Middlesex. He died in 1766, aged 74 years.

His son, William Caslon II., had been admitted into partnership some time before the father's death, and on the happening of that event succeeded to the business. He greatly improved and extended it, but died in 1788 without a will, whereupon it descended to his widow and his sons William Caslon III., and Henry, the latter of whom died very shortly afterwards, leaving his share to his relict Elizabeth. William managed the concern till 1793, when he sold his interest to his mother and sister-in-law. These two ladies now actively superintended the business, but were hardly able to compete with the other founders, who had by this time become powerful rivals. Old Mrs. Caslon died in 1799, and her daughter-in-law became sole proprietress. She now took into partnership Mr. Nathaniel Catherwood, and with his assistance revived the drooping fortunes of the concern. On the death of both in 1808, Mrs. Caslon's son, Henry, carried on the foundry, first in conjunction with Mr. Catherwood's brother, and afterwards in partnership with Mr. Livermore. To these Mr. Caslon's son, Henry William, succeeded. He died but a few years ago, the last of his race, though the Chiswell Street Foundry is still carried on in the name of H. W. Caslon & Co., the acting partner being Mr. T. W. Smith.

The first William Caslon had an apprentice, Jackson by name, who, in 1733, managed to discover the mode of cutting punches by stealthily observing his master's workmen as they worked in secrecy. Having, with a fellow-apprentice named Cotterill, headed a movement among the foundrymen for increased wages, he was dismissed. Entering the navy, he had by 1763 received sufficient prize money to enable him, with three others, to set up a foundry of his own, which, as he was a skilful workman, speedily flourished. On his death, in 1792, it was bought by William Caslon III., who in 1807 relinquished the business in favour of his son, William Caslon IV. He, in 1819, sold all his punches, matrices, &c., to Messrs. Blake, Garnett & Co., of Sheffield, whose admirable foundry, greatly extended and improved, is now carried on there by Mr. Henry Stephenson, under the style of Stephenson, Blake, & Co.

Vincent Figgins was first apprentice and afterwards foreman to Jackson, and on the death of the latter, was induced by Mr. Bensley, the printer, to begin business on his own account. This he accordingly did in 1793, setting up his foundry in Swan Yard, Holborn. He was succeeded by his two sons,

THE PROCESS OF HAND CASTING.

Vincent and James, the latter of whom is now an Alderman of London, his great business in Ray Street being managed by his son.

Mr. Cotterill, the fellow-apprentice of Jackson at Mr. Caslon's, set up a foundry of his own in Nevil's Court, Fetter Lane. He was succeeded by Mr. Thorne, his apprentice, who removed to Fann Street. Upon his death, about 1820, the business was purchased by Mr. Thorowgood, who took into partnership his traveller, Mr. Robert Besley, afterwards Lord Mayor of London. Mr. Besley retired in 1862, the foundry being purchased by Mr. (now Sir) Reed and Mr. Fox. The latter died a few months ago, and has been succeeded in the management by Mr. Andrew Reed, the name of the firm being now Reed and Fox.*

It is remarkable that the number of type foundries fixed for England since the decree of 1637 can scarcely be said to be increased even at the present time. There are, indeed, several minor foundries, the chief of which is the Type Founding Company's, an establishment which is likely in the course of time to become of considerable extent; but the great English foundries are four, viz., those of Messrs. Caslon, Figgins, Stephenson, Blake, & Co. and Reed & Fox. Each of these, as has been shown, may be traced back to Caslon, and each in its career has swallowed up several smaller ones.

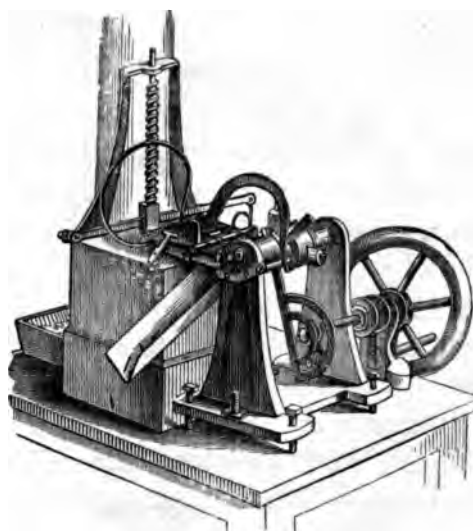
Events in Scottish and Irish printing are purposely omitted from this treatise, but the foundry of Miller and Richard of Edinburgh, from its close connections in this country, must not be left unnoticed. It was established in 1809 by Mr. William Miller, who, in 1823, was joined by his son, Mr. Walter Richard. The business is now carried on by the sons of the latter.

Up to comparatively recent years the hand mould described by Moore was in use in all foundries. With it letter founding was a very slow process, for the matrix had to be removed after each type was cast. The first improvement was the addition to the mould of a small lever, by means of which the matrix could be sufficiently raised to release the letter which had been cast. On the next day, taking his finger off the lever, the spring on the matrix replaced the latter in its former position. This simple contrivance enabled types to be cast with the rapidity as compared with the older process.

* The foundry established by John Baskerville at Birmingham, about 1750, deserves to be alluded to. His matrices are still at the Clarendon Press, Oxford, but the majority of them were purchased in 1799, after the death of the great Birmingham printer, by Beaumarchais, the French poet, who took them to Kehl, and printed the edition of Voltaire's works with them.

Large letters could not be cast well in the same manner as smaller ones, as they required a greater force of metal than could be obtained by pouring from a ladle and jerking the mould. David Bruce, of New York, overcame this difficulty in 1834, by fixing in the metal pot a small pump, to the nozzle of which the mouth of the mould was held with the left hand, while the handle of the pump was jerked downwards with the right. This great improvement was quickly adopted in all foundries.

It was from this hand-pump that the type-casting machine was developed. Many inventors endeavoured to solve the problem, Mr. Henry Bessemer very nearly doing so in 1838. Mr. Bruce, however, was the first who successfully

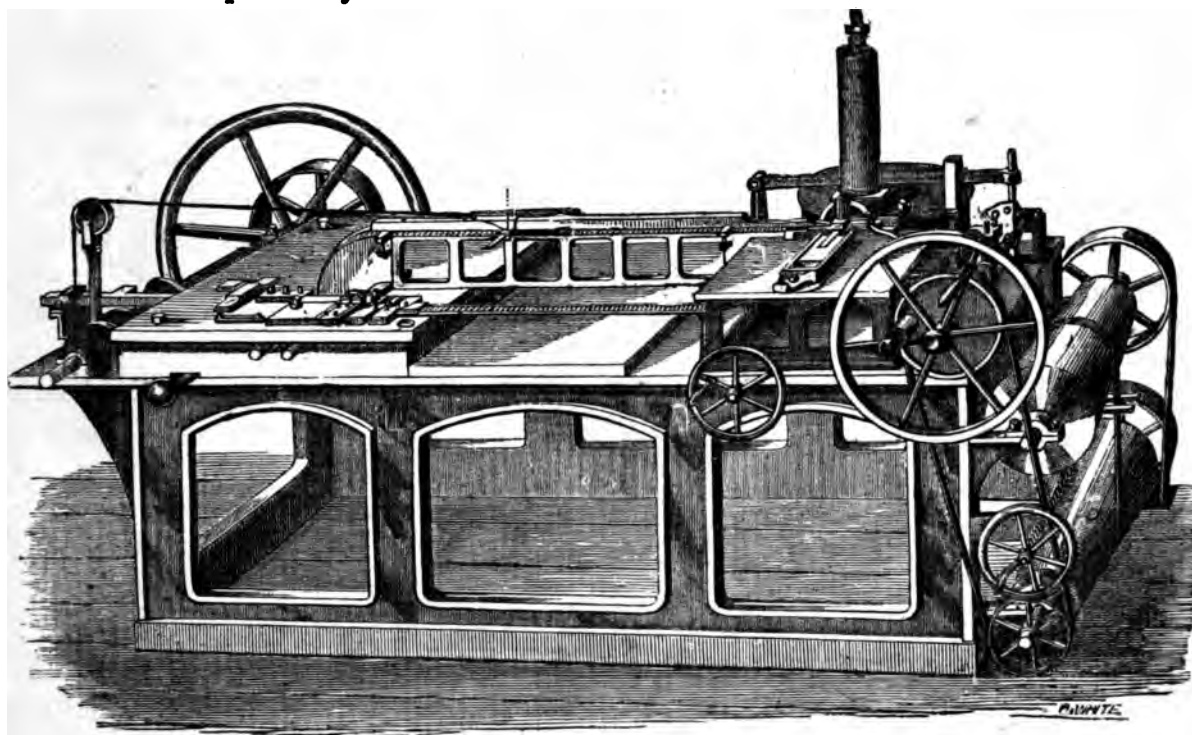


THE HAND TYPE CASTING MACHINE.

accomplished the task.* His machine was introduced into Britain in 1848 by Messrs. Miller and Richard, who also improved it. In it the opening and closing of the mould, the advancement of it to the nipple of the pump, and the injection of the metal, are done automatically. It is now used in all the chief foundries, and is driven by steam power. The latest development it has undergone is in the machine of Johnson and Atkinson, patented in 1859 and 1862, which not only casts the type, but also rubs and dresses it, removing the "break," and rendering it fit for immediate use by the printers.

* Were this a general history of typefoundry, the efforts of Henri Didot, Pouchée, and Brockhaus would not pass unnoticed.

The type metal described by Moxon was an alloy of lead and iron, with a small quantity of antimony. Iron was afterwards discarded, and the two other metals were alone made use of. In 1856, however, tin began to be mixed with them, the effect being that the letters were made tougher and much more durable. All good foundries now use the new alloy, though the proportions of the constituents vary somewhat with each house. Their recipes for mixing the metals are kept closely secret.



JOHNSON AND ATKINSON'S TYPE CASTER.

During the past half century wonderful enterprise has been shown in the production of faces of all conceivable kinds. Each of the four firms mentioned possesses many thousands of matrices, and it is the almost impossibility for a new foundry to overtake the start which they have gained that deters fresh competition, and ensures them the virtual monopoly they enjoy.

CHAPTER VII.

THE DEVELOPMENT OF THE PRINTING PRESS.

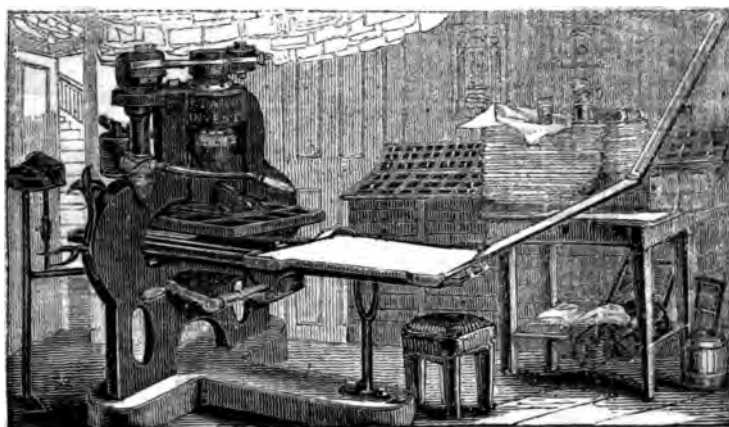
OF all the implements of the printer, the Press has been the subject of the greatest development; indeed, it has all but monopolised the attention of those who have directed their efforts to the improvement of the tools and material of the printing office. Of late years there has been such a multitude of new presses and printing machines, that it would require much space even to enumerate them, and an exhaustive treatise on printing machinery would fill a fair-sized volume. We propose, therefore, to mention those only which have possessed some great distinguishing feature, and which form, as it were, the main steps in the march from the cumbrous wooden press of Badius Ascensius to the highly-finished machinery of the present day.

The common screw press is much older than the art of printing from moveable types, and was probably employed by some in the process of block-printing; though the usual course was to take the impressions by means of a burnisher, as mentioned in a former chapter. The use of a press seems to have been nothing novel to the early typographers, for though they make much of the fact that their works were executed from moveable types cast in metal, they never mention the other important element in the production of them. Fortunately for us, Badius Ascensius used the press as his trade device, and it is from his representations of it (one of which, taken from a book printed by him in 1507, is reproduced on page 27), that we form an idea of its character.

The original printing press would seem to have been a common screw press without any spring on the "pull," but modified to meet the requirements of the case, in so far as greater strength, a travelling bed and a perfectly even impression were concerned. The addition of a rounce for winding the table in and out, and a tympan and frisket, appears to have been made very soon,* and then, although the platen was so inconveniently small that almost every forme required two impressions, printers appear to have been so well satisfied with this press, that it was in general use for nearly three centuries.

* Badius's press is clearly fitted with a rounce. See the illustration before alluded to.

The first improvement upon it was made by William Jansen Blaew, of Amsterdam, who, after serving as assistant to the astronomer Tycho Brahe, turned printer of geographical works, and keenly experiencing the defects of his press, set about remedying them. In this he was very successful, not only rendering the platen more stable, but adding a contrivance for instantly releasing the impression when the pressman let go the bar. This press of Blaew's was described by Moxon in 1683 as "a new-fashioned press," and strongly recommended by him. It was a long time before it came into general use, so ignorant and prejudiced were the printers of those days; yet, when its merits became appreciated, it continued in favour, with very slight modifications, until the beginning of the present century, when it in turn was displaced by the press invented by the Earl of Stanhope.



THE STANHOPE PRESS.
(From *Johnson's Typographia.*)

Up to the year 1800 presses were made almost entirely of wood; an element which rendered them necessarily cumbrous and comparatively weak, so much so, that four pages of octavo was about as large a forme as could be printed at one time. It was Charles Mahon, third Earl of Stanhope, who first constructed a press of iron. Not content with the superiority which this alone achieved, he remodelled the shape, rendering it more compact, and turning his attention to the means of procuring pressure, devised a system of levers, which were so eminently successful in their power and application, that he was able to use a platen of twice the ordinary size. Few inventions have been more important than this one, all subsequent hand presses being based upon it; and it is not

too much to say that the name of Stanhope will ever live as one of the greatest connected with the printer's art.

The success achieved by the Earl of Stanhope directed the genius of other inventors towards the printing press. John Ruthven, of Edinburgh (in 1813), and Thomas Cogger, devised presses which had considerable merits and attained no little popularity for a time; but their sun was soon eclipsed by the well-known "Columbian," a press invented by George Clymer, of Philadelphia, and patented here in 1817.

Seven years later Mr. R. W. Cope, of Finsbury, the predecessor of the now celebrated firm of Hopkinson and Cope, invented what he called the "Albion"



THE COLUMBIAN PRESS.



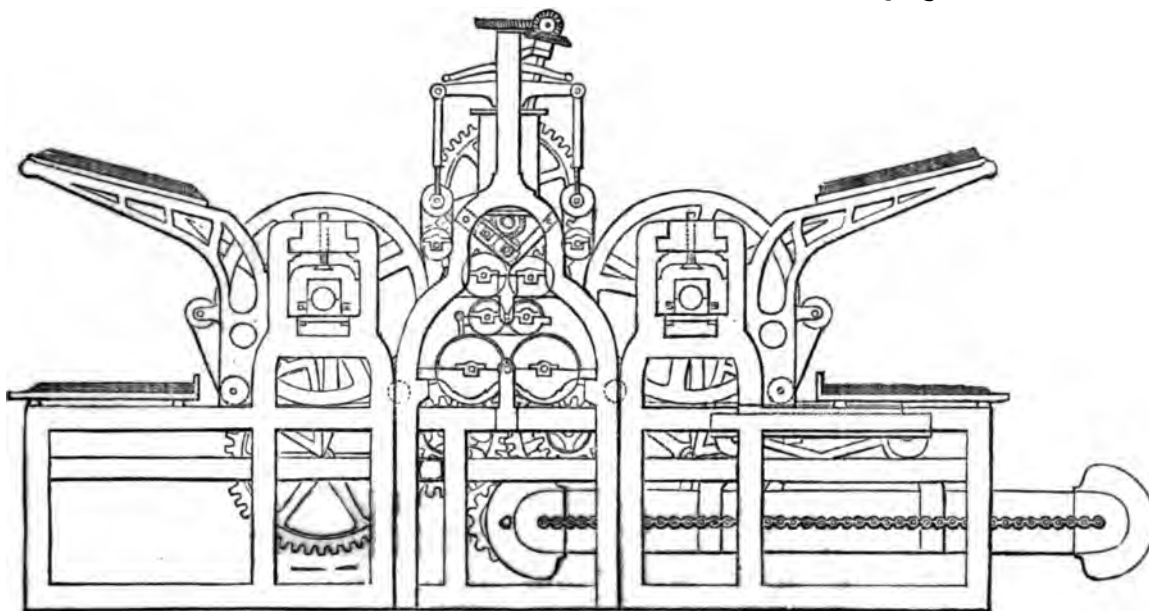
THE ALBION PRESS.

press. This and the "Columbian" now monopolise the entire field for hand presses in this country, the former being preferred, except for very large sizes, where the combination of levers in the latter renders it easier for the pressman to manage.

Ten years prior to the Earl of Stanhope's invention, namely in 1790, Mr. William Nicholson took out a patent for improvements in printing. His specification is one of the most remarkable ever filed, as it comprises almost every principle that has yet been successfully adopted. He proposed the use

of cylinders in printing machines, laid down the principle of the travelling type-bed, and even showed how printing could be performed upon a web of paper from a cylinder surrounded with type acted upon by another covered with soft leather. It was he, too, who invented the roller for distributing and applying the ink, and the gripper for seizing the sheet of paper to be printed. Brilliant as his genius was, he was only a theorist, and never brought any of his notions to a practical result, leaving to others the carrying out of the principles he had laid down.

It is to Frederick Koenig, a Saxon, that the world owes the first actual printing machine. He, while working as a printer at Leipzig, conceived the



KOENIG'S "TIMES" MACHINE.

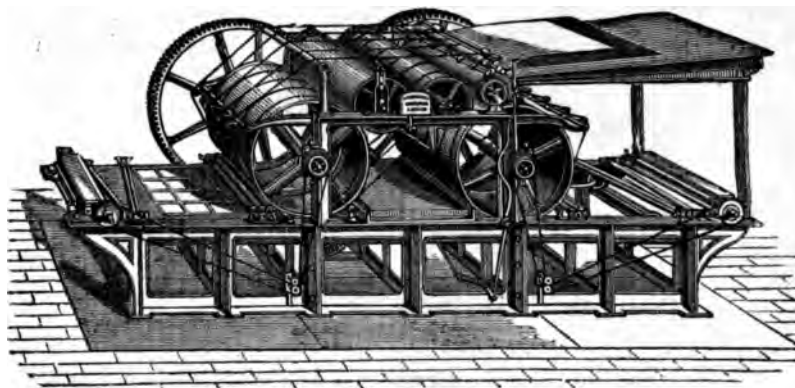
idea that the motions of the ordinary hand press might be accelerated. Receiving no encouragement in Germany, he came to London in 1806, and here soon effected an arrangement with Mr. Thomas Bensley, an eminent printer, who undertook to provide the necessary funds for carrying out the project. These two were afterwards joined in partnership by Mr. Richard Taylor and Mr. George Woodfall, the latter of whom shortly retired. Aided by his friend and subsequent partner, A. F. Bauer, Koenig produced in 1810 a platen machine which resembled a hand press moved by mechanism. On this, in April 1811, was printed a sheet (Sig. H) of the "Annual Register" for 1810, the first part of a book ever printed by a machine.

Koenig's next machine had a travelling type bed and a large impression cylinder, which made a third of a revolution for each impression, remaining still while the sheet was fed in. Whether he knew of Nicholson's project and merely adapted it, or whether he actually invented the principle afresh, is uncertain. It is but just to say that Mr. Nicholson, who knew of Koenig's machine, made no objection to the infringement of his patent. This machine was finished in December, 1812, and with it were printed two sheets of Clarkson's "Life of Penn," the first part of a book printed by a cylinder machine.

Among those who saw this machine was Mr. John Walter, the proprietor of *The Times*, and he was so pleased with it that he commissioned the inventor to make a two-feeder machine for him. It was completed after considerable trouble, and was first used in printing *The Times* for the 29th November, 1814, being driven by steam power and turning out 1,100 impressions an hour.

In 1813, Bacon and Donkin made a machine in which the type was affixed to the sides of a prism and acted upon by an irregular-shaped impression cylinder. It was very ingenious, but wrong in principle, and consequently soon passed away.

Koenig patented, in 1816, a perfecting machine, *i.e.* a machine for printing both sides of the paper, and subsequently improved *The Times* machine, so that it would print 2000 impressions per hour.



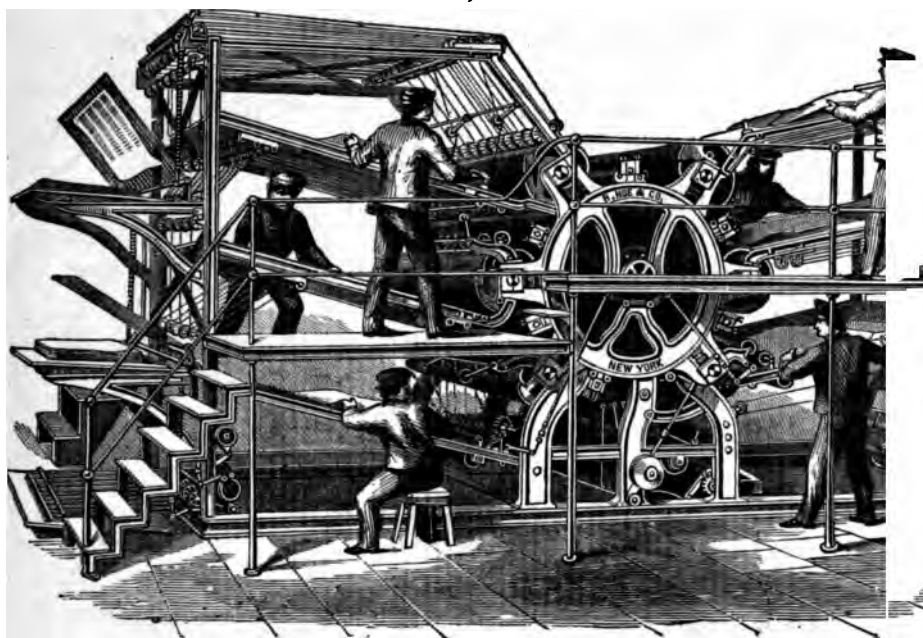
COWPER AND APPLGATH'S PERFECTING MACHINE.

Koenig's machine was greatly simplified and improved by Messrs. Cowper and Applegath in 1818, and these ingenious men, in 1824, invented a perfecting

COWPER AND APPLGATH.

machine which is in principle the same as those now made by and Messrs. Dryden, and so familiar in large printing office day. It was Mr. Cowper also who devised the exceedingly sinking arrangements now used on all non-rotary cylinder machines.

In 1827, Messrs. Cowper and Applegath made a machine. It had four impression cylinders capable of producing 6000 per hour. This eventually superseded Koenig's, and was in constant use when Mr. Applegath devised another machine, in which he adopted the principle of affixing the type to a rotary cylinder.



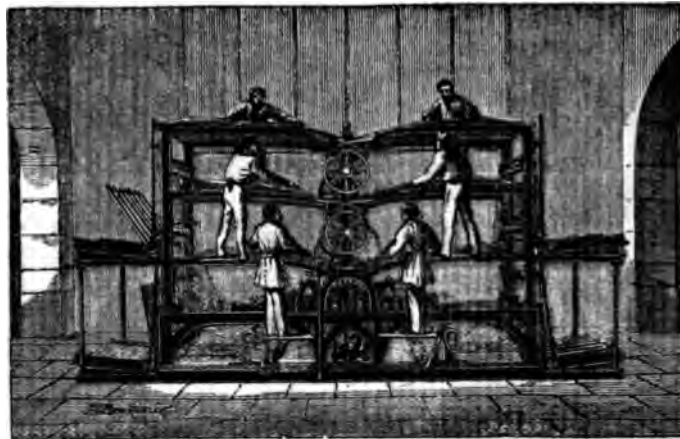
HOE'S SIX-FEEDER MACHINE.

In this machine the type cylinder was made to revolve and was surrounded with eight impression cylinders, into each of which sheets were fed from horizontal feeding boards. It was capable of making 12,000 impressions an hour.

In 1857, a still more remarkable machine was introduced and fitted up at the office of *Lloyd's News*. It was the invention of John Walter of New York, and differed from Applegath's, in that the cylinder revolved horizontally instead of vertically. It was much more compact, and driven at a higher speed. Moreover, in all previous machines

were required to take off the sheets when printed as to lay them on the impression cylinders. Hoe dispensed with these takers-off altogether by inventing the "flyer," an ingenious finger-like contrivance, which takes the sheets from the machine and automatically lays them upon a delivery-table. Hoe's machines were made with from two to ten impression cylinders, the latter kind being used at the offices of *The Times*, *Daily Telegraph*, and other large newspapers. These ten-feeder machines would make 20,000 impressions an hour.

In 1868, a machine was imported from France, by the proprietors of the *Echo*. It was the invention of M. Marinoni, an eminent printers' engineer of Paris, and differed from all previous newspaper machines in that it perfected the sheet while they printed one side only. With this beautiful piece of

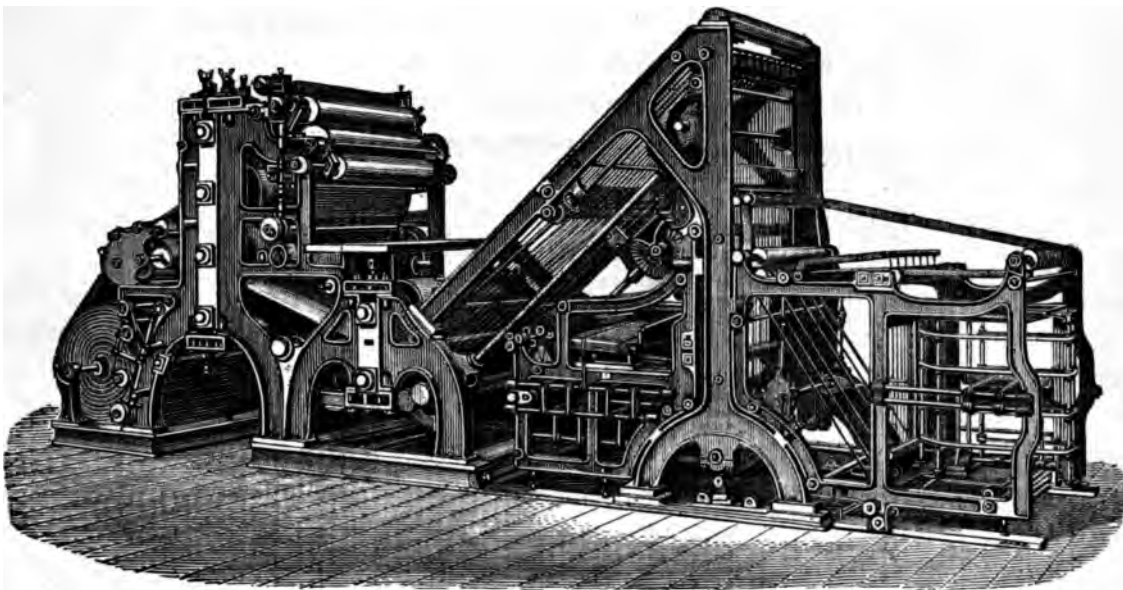


MARINONI'S MACHINE.

mechanism, six layers-on could produce 10,000 perfect newspapers per hour; of the *Echo*, indeed, 20,000, for two copies were printed on each sheet. This machine would have come into general use had it not been already supplanted by another, which printed not from separate sheets, but from a reel or web of paper, sometimes four miles in length.

It was about 1862 when Mr. Macdonald, the manager of *The Times*, first attempted to realise Nicholson's theory of printing from a web. The difficulties were enormous, but in 1868 they were successfully overcome, and in the following year *The Times* was printed upon a machine of an entirely different nature. It was the joint invention of Mr. Macdonald and Mr. Calverley, the chief engineer of *The Times*, and was named, after the chief proprietor of that journal, the "Walter Press." In this machine the paper passes first over damping cylinders to wet it,

and then between two sets of type (or rather stereotype) and impression cylinders, which print the paper on both sides. On emerging from these it is received by cutting cylinders, which almost sever one paper from another. In its further passage between fast travelling tapes, the web is separated into sheets, and these are, by means of a divider and a flyer beating backwards and forwards, ultimately deposited on two delivery tables. The average speed of these machines is 12,000 perfect copies per hour, and they require but one man and two boys to look after them.



THE WALTER PRESS.

Many other machines of the same kind have lately been constructed. Even before *The Times* was printed on the "Walter Press," the *Daily Telegraph* had imported from America one made by Mr. Bullock, of Philadelphia, who had independently adopted the same principle. Soon after the "Walter" came the "Victory" of Messrs. Duncan and Wilson, of Liverpool, which not only printed from the web, but delivered the sheets ready folded. The "Prestonian," of Messrs. Bond and Foster, was made to print from moveable type. Messrs. Hoe, Marinoni, and others have also devised web machines, which are used by some of the most important newspapers, the machines of the two last-named makers being so arranged that they deliver several sheets at a time. Folding machines have lately been applied to the "Walter Press," as shown in the illustration.

So much for newspaper machines, which are designed for speed rather than for good printing, and are therefore unsuited for book work. We must now return to earlier days.

Shortly after Cowper and Applegath brought out their first machine, Mr. David Napier constructed one which differed from it and Koenig's, in that it was much more compact, and that the sheets were retained on the impression cylinder by the action of grippers instead of tapes. In 1824, he made a gripper perfecting machine for Mr. Hansard, who has described it in his *Typographia*. In this the rising and falling cylinder was introduced. About the same time he made a stopping cylinder machine from the designs of Mr. Rutt, but this does not seem to have found much favour, though the stopping cylinder was subsequently adopted by other makers, and is used in almost all modern machines. Napier's single-cylinder machine, called the "Desideratum," was purchased by printers throughout the country, and held undisputed supremacy for nearly thirty years. It had a larger impression cylinder, and the sheets were fed in from the top. Mr. Napier also introduced many of his productions into France, where his double cylinder machine was improved upon by Parisian engineers, and subsequently developed into the "Anglo-French" machine.

In 1851, Thomas Main made the first jobbing machine. He adopted a small cylinder to which he gave a tumbling motion which rendered it very fast. This soon became a very popular machine, and, as improved by Conisbee, is still preferred for certain classes of work.

In 1852, Stephen Soulby patented, a machine in which the cylinder travelled over the type. He called it the "Ulverstonian," and for a while it was well patronised. Subsequent inventions, however, entirely superseded it.

In 1854, Mr. Mr. Myers, of Southampton, brought out a large cylinder machine which he called the "Caxton," this also was popular for a while.

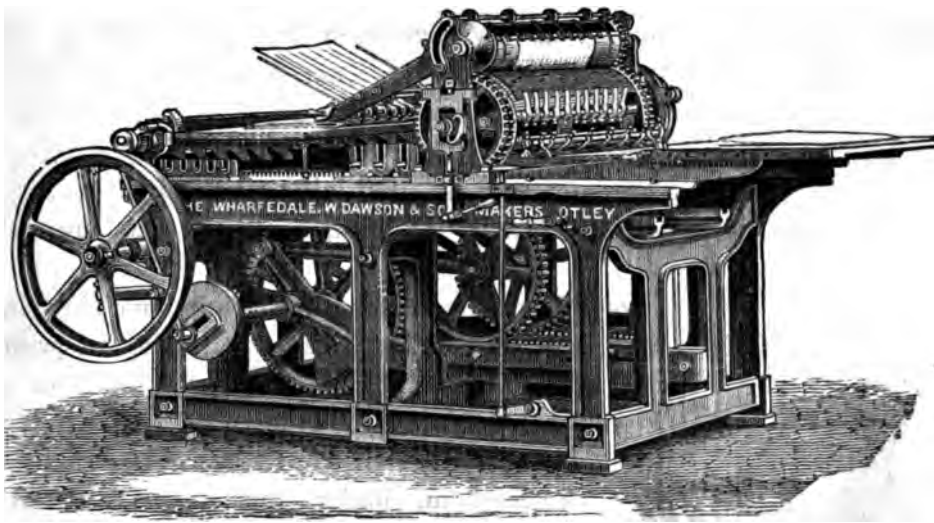
About 1855, Duncan and Boyd, the former of whom had been employed with Main, brought out a stopping cylinder machine, as also did Henry Ingle in 1858. The former machine was subsequently known as the "Diamond," the latter which was called the "Sector," was modified in 1861, and is now known as the "City."

About 1859, Mr. Samuel Bremner invented the "Belle Sauvage" machine—so-called after the name of the works of Messrs. Petter and Galpin, his then employers. This had also a stopping cylinder, and was the first machine fitted with a "stop motion" for extra inking. It was exceedingly popular, and

succeeded in driving some of its competitors entirely out of the field. It has subsequently been developed by its inventor into the "Bremner" machine of Messrs. Harrild and Sons.

In 1855, Mr. William Dawson, of Otley, who had been the maker of Soulby's "Ulverstonian," aided by his foreman, David Payne, brought out the "Wharfedale," a stopping cylinder machine with new appliances. This is now made by several firms, and shares with the "Bremner" the highest reputation among English printing machines.

In all these stopping cylinder machines, the differences consist not in the actual method of obtaining the impression, but in the mechanism by which



THE WHARFEDALE MACHINE.

the table and cylinder are moved, and in the appliances for securing a good distribution of ink, perfect register, freedom from slur, and evenness of impression. To distinguish them on these points, would require greater space than we can afford.

In 1858, Mr. Conisbee invented the single-cylinder two-feeder machine, by means of which he achieved the same end as other makers with their two impression cylinders.

Four years later, the same engineer patented a two-colour machine. In this there are two formes of type and two sets of inking apparatus, one at each end of the machine; the grippers on the cylinder retain the sheet until it has received an impression from each forme. Mr. Conisbee, in conjunction

with Mr. Smale, has also produced a rotary web machine capable of printing in several colours. Quite recently, Mr. Newsum, of Leeds, has invented a new rotary two-colour machine, in which the formes are placed on opposite sides of an irregular-shaped revolving drum.

Although the Hoe newspaper machine imported in 1859 was fitted with flyers for taking off the sheets, it was not until quite recently that they became general in England. Now, however, few cylinder machines are made without them. Feeding is still done by hand, though several attempts have been made to substitute mechanical appliances for manual labour, the American apparatus of Ashley, worked on the pneumatic system, being the nearest approach to success.

Of platen machines, Koenig, as we have seen, made the first in 1811, but he not being very successful, attention was diverted from them until 1829, when Mr. Andrew Spottiswoode and Mr. Brown constructed one which was driven by steam power. Since then, several others have been made, varying in the methods of imparting the pressure and in the inking arrangements; the most perfect being those designed by Mr. J. M. Napier, and used by the Bank of England.

In 1833, John Kitchen, of Newcastle, invented a platen machine in which the type was placed in a vertical bed. This plan was adopted with great success by Gordon, of New York, in a small press worked by treadle. It was introduced into this country in 1867, by Messrs. Cropper, of Nottingham, under the name of "Minerva." Small treadle platen machines have now become a recognised institution, and are superseding the hand press to a great extent. There are about half a dozen in the field, the two chief competitors of the "Minerva" being the "Liberty" and the "Universal," both American machines.



THE MINERVA PRESS.

Two inventions, both intimately connected with printing machinery, remain to be noticed—the composition roller and the stereotype; without the former, good printing otherwise than by hand would have been impossible; but for the latter the production of the modern newspaper would have been utterly impracticable.

Earl Stanhope tried hard to obtain a suitable inking roller, employing all kinds of skins, silk, and other material, but without success, the unavoidable seam rendering the roller practically useless. It was Mr. Bryan Donkin, one of the inventors of the polygonal machine before mentioned, who first cast rollers in a composition of glue and treacle. This was in 1811, and though Mr. Donkin's machine has passed away, his rollers have survived, nothing better having been discovered up to the present time.*

In 1818 Mr. Cowper substituted for the old ink-block and balls, the modern ink-table and press roller. So strong, however, was the prejudices of the men against the innovation, that it was like to have been strangled in its birth. The credit of overcoming this blind opposition, and of establishing the use of the composition roller is due to the late Mr. Robert Harrild.

The invention of the Stereotype is attributed to William Ged, of Edinburgh, in 1725. Coming to London, he cast some plates for Mr. Basket, the king's printer, and subsequently (about 1731) stereotyped some Bibles and Prayer Books for the University of Cambridge. But his prospects of success were blighted by the prejudices of the pressmen, who did not scruple to damage the plates, and by the unfair conduct of his partners. Returning to Edinburgh in 1738, he printed several editions of Sallust from stereo plates, some copies of which still remain. He died in 1749, and with him stereotyping seemed to have died also, for nothing was heard of it till 1780, when it was re-invented by Dr. Alexander Tilloch, also of Edinburgh. Dr. Tilloch imparted his secret to Mr. Wilson, a printer of London, and he communicated it to Earl Stanhope, who had many experiments made at his own expense, and finally succeeded in introducing the stereotype into the printing trade.

The old process was to take a mould in plaster of paris, and to cast the plate in it. Plates thus made were always flat. Cowper, in 1816, managed to bend them so that they could be used on his rotary machine, but he was only partially successful.

About 1856, Mr. Dellagana introduced from the Continent what is known as the paper process of stereotyping. In it the mould is taken in papier maché,

* Koenig and Cowper used these rollers in their printing machines, with Donkin's permission. Composition balls had been used a few months previously. The discovery of their applicability to the printer's art is variously related,—one story says the notion was derived from the Staffordshire potters by a Mr. Foster; another, that it was accidentally due to the upsetting of a glue-pot by Mr. Edward Dyas, printer, of Madely, Shropshire, who not having a pelt ready, used a piece of the glue while in a soft state for inking his forme. He found it answer so well that he discarded the pelt balls in favour of the glue, adding treacle to it to keep it soft.

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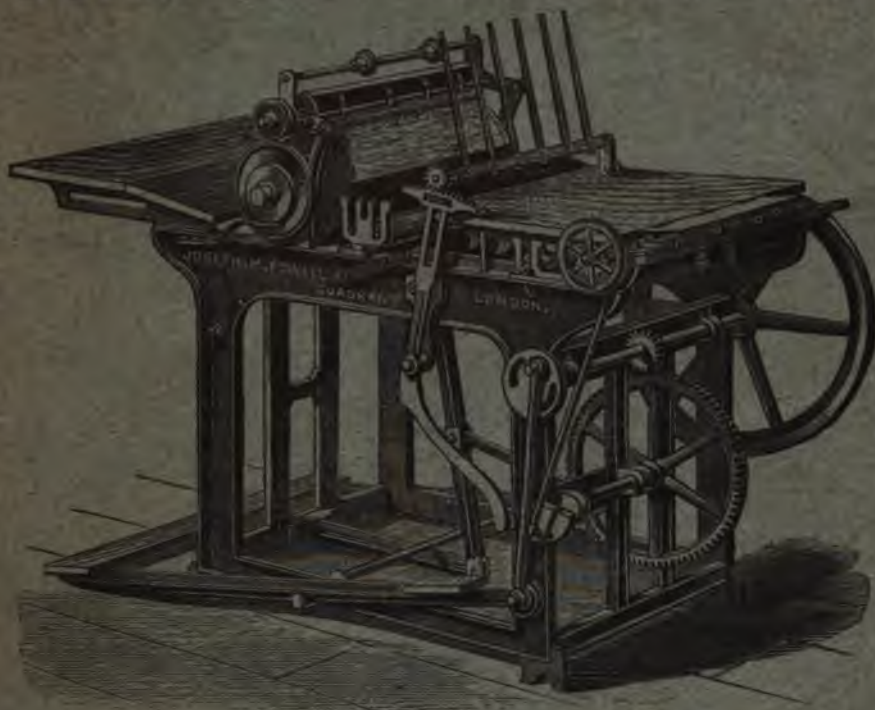
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